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November 23, 1998

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Federal Communications Commission
Office of the Secretary
Room TW-A325, The Portals
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Washington, DC 20554

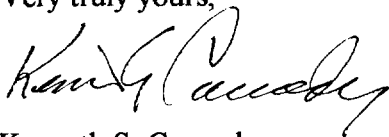
RE: WT Docket No. 98-143

Dear Secretary:

Enclosed for filing are an original and four copies of my formal Comment to the Notice of Proposed Rule Making in the referenced docket number. Also enclosed is a "stamp and return" copy of my Comment (first page only) and a post-paid return envelope.

Based on my telephone conference this morning with the Secretary's Office, I believe that I have provided the correct number of copies in the correct format. If I have overlooked anything, please advise. Thank you for your assistance in this matter.

Very truly yours,



Kenneth S. Cannaday

Enclosures: original and four copies

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Before the
Federal Communications Commission
Washington, D.C. 20544

In the Matter of

WT Docket No. 98-142 **RECEIVED**

1998 Biennial Regulatory Review --
Amendment of Part 97 of the Commission's
Amateur Service Rules.

RM-9148
RM-9150
RM-9158

DEC 1 1998
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COMMENT OF KENNETH S. CANNADAY IN RESPONSE TO
NOTICE OF PROPOSED RULE MAKING

1. I am an amateur operator first licensed in 1960. I currently hold an extra class license. A resume of my amateur radio and professional activities is attached as Exhibit 1. This Comment responds to the Notice of Proposed Rule Making ("NPRM"). An important disclaimer relating to the use of over generalizations in the interest of brevity is attached as Exhibit 2. Section designations refer to the regulations of the Commission ("FCC"), specifically to Section 97.1, which defines the purposes of the amateur service.

Introduction

2. The most important issue raised by the NPRM concerns Morse code telegraphy ("CW") proficiency testing. I will recommend two changes that will eliminate the need for physicians' certifications in connection waivers of CW testing for the disabled. I will produce documentary proof that (1) CW is currently one of the two dominant *high frequency* modes actually used by amateurs, accounting for nearly half of all formal amateur activity *on high frequency*; and (2) CW is the mode of last resort among amateurs due to its weak signal superiority and its technical simplicity. I will correlate the purposes of the amateur service set forth in Section 97.1 to proposed levels of CW testing.

License restructuring affects *high frequency* only

3. The entry level license of choice is the technician license. Testing consists of a simple multiple-guess quiz. CW testing is not required. The technician license includes *all* amateur privileges on frequencies above 30 MHz. Nothing in the NPRM indicates that the Commission is considering reinstating CW testing for the technician license. All that is under consideration is the licensing structure and testing standards for amateur privileges below 30 megahertz (hereinafter,

“high frequency” or “HF”). By definition, the activities to be effected by these regulations occur on high frequency.

4. Frequencies above 30 MHz (“VHF/UHF”) are generally characterized by reliable straight line, ground wave propagation; low noise; short wave lengths and small, convenient antennas; and elements of infrastructure such as satellites and repeaters. High frequency is characterized by inconsistent sky wave propagation with characteristic signal strength fading; high levels of noise; longer wavelengths and larger, real estate consuming antennas; and an absence of infrastructure.

5. The Commission observed in Paragraph 21 of the NPRM: “[t]he decreasing role of telegraphy as a communications mode is also demonstrated in our implementation of the Global Maritime Distress and Safety System.” The GMDSS relies on satellite technology. Such observation is appropriate in suggesting a decreasing role for CW in wireless communications generally. Similarly, the role of HF in commercial, military, and government communication is decreasing. High frequency wireless is being replaced, in part, by the same technologies that are replacing CW; namely, satellite and other technologies operating at VHF/UHF. By definition, the communications to be effected here occur on *high frequency*, and only on *high frequency*. Therefore, satellite and similar VHF/UHF technologies are of little relevance.

Physician certification

6. Currently, disabled applicants entitled to waive the higher speed Morse code tests must obtain physicians’ certifications. This requirement burdens physicians and disabled individuals. It causes administrative and political stress for the Commission. Furthermore, it is subject to abuse. There are simple alternatives that will eliminate all these burdens, while promising to reduce abuses. First, the current physician’s certification procedure should be replaced with a system of self-certification. The certificate must contain an adequate disclosure of potential penalties for fraud. Certifications need not be routinely reviewed for substance, only for form; the VEC should make sure that all blanks have been complete. Exhibit 3 contains (1) a discussion of how this proposal is likely to reduce instances of abuse, and (2) a proposed Certification form.

7. Second, the FCC should abolish the extra class phone sub-bands. This would eliminate entirely the need for any form of certification in connection with 20 wpm testing. The extra class CW sub-bands would remain, as set out in Exhibit 4. An amateur upgrading from advanced to extra class would receive additional privileges in the CW sub-band only. Therefore, there would be no waivers of CW testing for extra class, CW-only privileges. The advanced class written exam, in the opinion of many, is more difficult than the extra class written exam. The main differ-

ence between advanced and extra class operators is CW proficiency. The elimination of the extra class phone sub-band recognizes this fact.

Actual extent of CW activity

8. In the NPRM, Paragraph 20, the Commission stated: "In the early days of amateur radio, radiotelegraphy was the primary communication mode of all radio operators, including amateurs. . . . Today, radiotelegraphy is just one facet of many diverse modes of radiocommunication that requires a technologically literate licensee." This statement, as applied to all wireless communication, is clearly true. In regard to amateur high frequency communication, however, CW remains the "primary communication mode" in that (a) it is one of the two modes that *dominate* actual amateur high frequency activity, and (b) it is *the mode of last resort* for amateurs. CW is the mode that amateurs resort to when no other mode can get through (or when limited equipment is available).

9. The actual extent of amateur high frequency CW activity has been a subject disinformation. Some have claimed that, like Latin, CW is a dead language. See Exhibit 5. Amateurs participate in a number of more or less formal activities. Objective data collected from such activities prove that CW remains enormously popular. The fact is, as shown below, Single Sideband ("SSB") and CW dominates on high frequency.

10. **DX packet cluster "spots."** One of the most popular HF activities is "DXing." This is the practice of contacting amateurs in other countries. It is how amateurs enhance international goodwill. Sec. 97.1(e). The DX cluster is a network that uses VHF packet radio to report the presence of foreign amateurs operating on high frequency. Data from this network are collected in Exhibit 6. They show that DX communication on high frequency occurs on CW and Single Sideband ("SSB") in similar proportions. Baudot radioteletype ("RTTY" or "FSK") is a distant third. No other HF modes show up at all.

11. **Contests.** This popular activity improves operator skills and enhances international goodwill. Sec. 97.1(c) and (d). Exhibit 7 is a list of major contests taken from the *ARRL Operating Manual*. It shows that there are more major contests for CW than SSB. RTTY is in distant third place. One can determine the level of participation in each contest from the scores, as shown in Exhibit 8. This published data show that the level of participation in CW contests is similar to SSB. There are no contests for other HF modes.

12. **Awards programs.** By far the most popular award program is the American Radio Relay League ("ARRL") DX Century Club ("DXCC"). Participants contact as many different

DXCC "countries" on as many different high frequency bands as they can. DXCC data for CW, SSB, and RTTY document the popularity of each mode among amateurs participating in the DXCC program. Exhibit 9 shows that SSB and CW participation are similar, and that RTTY is in distant third place.

13. **Survey results.** In the 1995 ARRL publication, *Antennas and Techniques for Low-Band DXing* ("Low-Band DXing"), John Devoldere of Belgium, ON4UN, reports the results of a survey of the most active amateurs engaged in DXing on the 1.8 and 3.5 MHz bands. Participants reported that they operated 84 percent on CW and 16 percent SSB on the 1.8 MHz band. On 3.5 MHz, these same amateurs operated 61 percent CW and 39 percent phone. Exhibit 10 is the published report of the survey. In April of 1998, the ARRL published the results of its survey, which showed that 46 percent of its members, including no code technicians, use CW regularly. Among extra class amateurs, 78 percent regularly use CW; the same percentage use SSB. Exhibit 23.

14. **Radio logs.** Exhibit 11 contains tabulated data from the logs of two recent, high profile amateur expeditions ("DXpeditions"). One team went to Libya; the other to the Solomon Islands. I selected these data because they were posted on the inter net and readily available. The Exhibit also contains logging data for W4NZC. These data show similar numbers of contacts on CW and SSB, with RTTY and satellite contacts in distant third and fourth places. None of the data show contacts using any other modes.

15. **Equipment manufactures.** Exhibit 12 contains data and discussion of the major manufacturers of amateur transceivers. It shows that they currently include built-in CW features, such as electronic keyers, as standard even in the lowest priced radios. In the past, similar features were optional at additional cost. This information tends to show that the demand for CW equipment is growing, not declining.

The technology of CW

16. CW has the serious disadvantage of being more labor intensive than SSB and other modes. Operators work hard to achieve a reasonable level of proficiency. For most, CW work requires concentration. [Note, however, such labor is minimal compared to the labor of foreign amateurs who must acquire a high level of English conversation skills just to participate in DXing on SSB. Signal interference, static, multiple accents, and the absence of lip reading and hand gestures combine to increase the hardship. Therefore many foreign amateurs confine their international operations to CW, where speaking skills are not required. This is one way that CW facilitates international good will. Sec. 97-1(e).]

17. CW has the advantage of being the primary and best weak signal mode. Dr. Devoldere states:

It is accepted as a standard that comfortable SSB reception requires a 10 dB signal-to-noise ratio. CW reception may have a much lower S/N ratio, and any CW operator can deal with a [zero] dB S/N ratio quite well. Experienced operators can dig CW signals out of the noise at [minus 10] dB S/N ratio. This proves again the inherent advantage of CW over SSB for weak-signal communications. (Low Band DXing, p. 3-1; see Exhibit 13.)

A similar observation appeared in the VHF column of *QST*. See Exhibit 16.

18. CW has other advantages. It requires only about a fifth of the bandwidth of SSB. CW is a simple technology compared to other modes. Amateurs do not and could not design or build SSB/CW transceivers like the ones they buy for as little as \$700. But we can and do build CW-only rigs. Exhibits 14 and 23 show that kits and home-brew invariably mean CW only. Without a reasonable level of CW skill, amateurs would have no incentive to design or build transceivers. In this way, CW enhances technical self-training. Sec 97.1 (c) and (d). Also, amateurs can and do put CW signals on the air in imaginative and unconventional way when other modes are not practical. See Exhibit 15. This ability has obvious benefit for the public interest, particularly in cases of emergency. Sec. 97.1(a).

19. On the other hand, technology has enhanced CW. For example, iambic keyers and CW keyboard have dramatically increased the transmission speeds for average amateur CW operators. The ability to copy at high wpm has never been more important.

20. Finally, CW is the mode of last resort among amateurs both because of its superior weak signal capability and its technical simplicity. When an amateur is unable to keep a schedule or otherwise complete a contact on SSB due to poor conditions, he often resorts to CW and gets through. Amateurs also resort to CW when equipment for the more technology-intensive modes is not available. See Exhibit 17 for personal examples.

Other ways in which CW facilitates the purposes of the amateur service

21. **International goodwill.** Sec. 97.1 (e). The objective data collected above establishes that amateurs without good CW skills are ineligible for about half of all opportunities to enhance international goodwill. CW is the superior weak signal mode and intercontinental signals are often weak. In poorer countries such as the former Soviet Republics, many operators cannot buy mod-

ern SSB/CW transceivers. Instead, they "home-brew" their gear; and home-brew means CW. Additionally, many foreign amateurs choose CW over SSB due to poor English speaking skills.

22. **Advancing the radio art.** Sec. 97.1(b). As experimenters, amateurs cannot expect to make major contributions in technologies that attract intense commercial interest. Progress in such technologies is more likely to come from the billion-dollars research budgets of multinational corporations than from some amateur's ham. The most promising possibilities for amateurs are in technologies that currently inspire little commercial interest. Amateurs rely on CW for moonbounce experiments (Exhibit 18), high speed CW meteor scatter propagation (Exhibit 19), low frequency experiments in Europe (Exhibit 20), and operations in the unlicensed low frequency experimenters' band (Exhibit 21). The *QST* article in Exhibit 16 documents the essential role of CW in a variety of experimental activities on frequencies above 50 MHz. In another example, CW provided the incentive for the research project reported in the May 1997 *QST*. Amateurs designed and constructed a tiny, cutting edge, 100 dB, class E power amplifier. They were assisted by funding at Caltech (Exhibit 22). The amplifier transmits CW signals only.

23. **Emergency communications.** As previously demonstrated, CW is the amateur mode of last resort. It gets through when other modes fail. It is technological simple and requires less gear than other modes. Amateurs can put a CW signal on the air when other modes are impossible. Exhibit 15 describes a remarkable example. An amateur used CW to communicate through a satellite. He generated the dots and dashes with the push to talk switch on his hand held FM transceiver. It would certainly be tragic if a life should be lost because some amateur did not have sufficient CW skills. Sec. 97.1(a).

CW testing standards

24. Human nature is such that prospective amateurs must have an incentive before they will undertake the labor required to achieve CW proficiency. That incentive is the CW proficiency examination. The 5-wpm test provides an incentive to start learning CW; it is in no way a realistic operating standard for reason set out in Exhibit 24. Minimum standards for commercial and military proficiency have generally been 25 wpm. Iambic keyers, memory keyers, and CW keyboards have made 30 wpm common on the amateur bands. Even amateurs who have passed the 20 wpm extra class exam must increase their skill if they want to participate in such activities as contests and serious DXing.

25. Retaining the novice CW sub-bands is absolutely critical. They provide opportunities for new amateurs, and old hands whose skills have grown rusty, to practice, as demonstrated in Exhibit 25. More importantly, however, operators with only novice level skill should never be

permitted to transmit on frequencies outside the novice band, where they will inevitably interfere with other amateur activities. Cf. NPRM paragraph 20.

Amateur opinion

26. A 1997 census of US amateurs by license class is attached as Exhibit 26. It demonstrates that only 10 percent held extra class licenses, and only 45 percent were general class or better. Thus, fifty-five percent would “benefit” from a reduction in the 13 wpm requirement, in the sense that they might upgrade with less effort. Allowing an opinion survey that includes such a majority to determine the future of CW testing is unwise. It gives the foxes a voice in determining hen-house security. If the opinions of no-code and slow-code amateurs are to be given the same weight as more advanced amateurs, then why not include short wave listeners, CB enthusiasts, and any other unlicensed citizen who might decide to apply for a license some day?

27. I am a member of the ARRL. I supported the League in the past. Nevertheless, I believe that inappropriate political considerations have shaped the League’s position on license standards. Coveted ARRL directorships are filled in hotly contested elections. Due to their numbers, novices and technicians hold the balance of power. The League’s request to reduce CW standards is a product of the inmates taking charge of the asylum. How else can one explain two utterly preposterous League proposals? First, the ARRL would give general class licenses, willy-nilly, to all current novices. Second, the League wants to allow *no code* technicians to transmit CW on *all* CW frequencies, excepting only the extra class sub-bands. This second proposal is not only reckless, it is patently illegal. The *QST* editorial in Exhibit 23, published in April 1998, apparently contains the opinion of ARRL staff who do not have to answer to novices and technicians in elections. I believe the opinion stated therein, to preserve the “status quo” on CW testing, is the opinion of the majority of amateurs holding licenses in the more advanced classes.

Conclusions relating to CW testing

28. Because the current license structure has evolved through piecemeal amendments, it lacks symmetry and elegance. Nevertheless, the system of five license classes and three levels of CW testing has many virtues. It allows Morse-illiterate amateurs interested in satellite and the other technologies to fully participate on all bands above 30 MHz. For those amateurs who want access to high frequency where CW and SSB dominant, the current system allows progress in manageable stages. Novice sub-bands provide a CW practice opportunity without disrupting other communications. The incentive license system encourages amateurs to increase their skills and knowledge and advance step by step.

29. In paragraph 24 of its Notice of Proposed Rule Making, the FCC asked the following question: "Were we to reduce the required Morse code elements, should we add elements to the written examination to ensure working knowledge of the newer digital technologies which, in part, are replacing the Morse code?" To the extent that "newer digital technologies" means high frequency technologies, it apparently refers to HF Packet, Amtor, Clover, G-tor, Pactor, and Pactor II. There is no evidence that any of these is replacing CW in HF amateur operations, not even "in part." They fail to show up in any of the formal amateur activities documented in Exhibits 6, 7, 8, 9, 10, and 11. By definition, amateur radio is a hobby. No technology is likely to find substantial acceptance unless amateurs enjoy using it. Therefore, the new technologies may fail to play a major role in the future of amateur radio for the same reason that RTTY remains in distant third place. See Exhibit 30.

30. In paragraph 24, the Commission asks, "[S]hould we consider specifying the method of examining for Morse code proficiency, such as requiring fill-in-the-blank or copying one out of five minutes sent, instead of allowing VEs to determine how to test for code speed?" As demonstrated in Exhibit 31, the Commission should consider specifying the one-minute-solid-copy method. Other testing methods are also adequate, but only if the FCC specifies a set of testing mechanics as discussed in said Exhibit. (This Exhibit also discusses written testing standards.)

31. **Summary.** The no code technician license includes all amateur privileges in the VHF/UHF spectrum. Only HF privileges are now in issue. The current licensing system, including CW testing, serves the purposes of the amateur service well. It ensures a skilled pool of trained operators, including CW operators. It facilitates international amateur communications and good will. It provides an incentive for amateurs so inclined to design and construct their own transceivers. It enhances experimentation in areas where amateurs are capable of advancing the radio art. It enhances the potential for emergency communications. If changes are made, they should be based on compelling reasons. I recommend only the following changes to the current licensing system:

(A) The physician's certification for handicapped individuals should be replaced by a self-certification procedure. A proposed certificate is attached as Exhibit 3. This would be less burdensome to all. I believe it would reduce cheating by unscrupulous individuals, since such individuals would not have the physician's certification to provide "cover."

(B) The extra class radio-telephone sub-bands should be abolished. The advanced class license should include all amateur privileges except in the current extra class CW sub-bands. This change will eliminate the necessity for handicap certification in connection with the extra class license while continuing to provide sufficient incentive for amateurs to acquire 20 wpm proficiency.

(C) CW-unskilled and -semiskilled (5 wpm) operators should continue to confine their CW activities to the novice bands, thus preventing interference to other activity.

(D) The Commission should mandate specific mechanics for CW testing. In other respects, the three-tier system of testing using 5, 13, and 20 wpm should be maintained.

Conclusion

32. CW is an old technology. Writing by hand and reading by eye are even older technologies. Newer technologies, including multimedia computers, satellite and cable TV channels, speech recognition software, books on cassette, electronic publishing, and others, are, in part, replacing reading and writing. Yet it would be bizarre to suggest that schools reduce teaching standards for reading or writing. Since CW remains a dominant high frequency mode and the mode of last resort, testing standards should remain high. My views--that CW is popular, that it encourages technical self training, that it is necessary to experimentation, that it enhances operator skills, and that the *status quo* should be maintained--were the views of the ARRL as recently as April, 1998. See Exhibit 23.

Respectfully submitted this 23 day of November, 1998

A handwritten signature in black ink, appearing to read "Kenneth S. Cannaday". The signature is fluid and cursive, with the first name "Kenneth" and last name "Cannaday" clearly distinguishable.

Kenneth S. Cannaday. W4NZC
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WT Docket No. 98-142

1998 Biennial Regulatory Review --
Amendment of Part 97 of the Commission's
Amateur Service Rules.

RM-9148
RM-9150
RM-9158

Exhibits to Comment of Kenneth S. Cannaday, W4NZC

1. Resume
2. Disclaimer
3. Self certification form and discussion
4. Extra class sub-bands
5. CW disinformation
6. DX Cluster spots CW, SSB, RTTY
7. List of major contests
8. Scores from recent contests by mode
9. DXCC participation by mode
10. Survey from Low Band DXing
11. DXpedition web pages; W4NZC log summary
12. Transceiver ads showing CW features
13. S/N ratios for CW and SSB compared
14. Transceiver kits and projects - CW only
15. Side bar: example of using CW in a creative manner
16. Experimental uses of CW on VHF
17. Mode of last resort examples
18. Interview with experimenter, moonbounce expert AF6Y
19. High speed CW and meteor scatter
20. Europe's low frequency band experimentation
21. US "LowFer" band experimentation
22. CW only Class E amplifier research project at Caltech
23. QST editorial by publisher K1ZZ
24. Five wpm "proficiency"
25. Novice sub-band activity
26. Census by license class
- 27 through 29. Omitted
30. High frequency digital modes
31. Testing mechanics for CW and theory

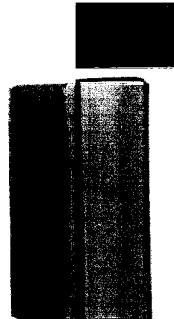


Exhibit 1: resumes

Amateur radio activities

Age: 52

License History: First licensed in March 8, 1960, as a general class amateur with all privileges, holding call sign W4NIT. My license expired at the end of its five year term. Next licensed on October 29, 1991, as an advanced class amateur holding call sign KO4KC. By the time this license arrived in the mail, I had already upgraded to extra class.

Current operating activities: I spend most of my time DXing. I operate a VHF packet station for purposes of connecting to the DX cluster network. I have two regular weekly schedules, one on SSB and one on CW. Periodically, I operate high frequency mobile. I frequently operate away from my fixed transmitter location using portable equipment.

Awards and Honors:

1. DXCC mixed mode, endorsed for 200 countries. I am currently eligible for a 250 country endorsement.
2. DXCC phone and DXCC CW, both eligible for endorsement at 175.
3. Worked All Continents.
4. ARRL Code Proficiency Certificate: 30 wpm.
5. Last Morse Code Transmission Award issued by Coast Guard Station NMN.

Current and Past Memberships:

1. American Radio Relay League.
2. Carolina DX Association.
3. Mecklenburg Amateur Radio Society.

Construction Projects:

1. Heathkit SB 1000 linear amplifier, currently in use.
2. Heathkit HW 9 multiband QRP (CW only) transceiver, occasionally in use.
3. Heathkit QRP power/SWR meter, occasionally in use.
4. Home-brew Digital Signal Processor, currently in use.
5. Home-brew SSB microphone with wave shaping, available for use.
6. Home-brew transmit/receive switching appliance, currently in use.
7. Fun Kit smart charger, 12 volt, 2 ampere, currently in use.

Exhibit 1 (page 2)

Other activities

My previous professional resume is attached. It summarizes my education and professional activities as an attorney through approximately 1990. I spent the last six years of my career engaged almost exclusively in the defense of personal injury and worker's compensation claims. In 1996, I retired from law practice, and Shelley and I went around the world. In large part, we retraced my 1974-75 travels in Asia. In 1998, we returned to our home in Charlotte, and I began to write a memoir of my 1974-75 adventures.

Over the intervening years, I have studied the Chinese Mandarin language, qualified as a black belt in Tae Kwon Do, made return trips to Asia, and maintained an active fitness and reading program.

KENNETH S. CANNADAY
UNDERWOOD, KINSEY & WARREN, P.A.
2020 Charlotte Plaza
Charlotte, North Carolina 28244
(704) 333-1200

Education:

Juris Doctor University of North Carolina at Chapel
Hill 1973

American Jurisprudence Book Awards: Criminal Law,
Criminal Procedure, Evidence, Torts, Property,
Contracts, Civil Procedure, Advanced Civil
Procedure, Creditor's Rights, Federal Jurisdiction,
Corporations, Insurance, Corporate Finance

Order of the Coif

Chief Justice Walter Clark Award

Note Published 50 N.C.L. Rev. 390 (1972)

Part-Time Employment: Residence Hall Advisor,
Hospital Laboratory Technician, Pattern Jury
Instructions, Army Reserve Medic

AB (History) University of North Carolina at Chapel
Hill 1970

Legal Employment:

1984 through present - Underwood, Kinsey & Warren, P.A.:
General civil practice with emphasis in civil
litigation, insurance, land condemnation, and
bankruptcy.

1980 through 1984 - Associate Professor of Public Law
and Government, University of North Carolina at Chapel
Hill, Institute of Government: Reporter for Committee
on Pattern Jury Instructions, Civil Subcommittee;
teaching short courses in evidence, trial tactics,
search and seizure; legislative reporting and bill
drafting; consultation with state officials.

1975 through 1980 - Assistant District Attorney,
Charlotte, N.C.: Prosecution of criminal cases in the
Superior and District Courts.

1973 through 1974 - Law Clerk to Hon. Franklin T.
Dupree, Jr., U.S. District Judge, Eastern District of
North Carolina.

Publications:

"Persons Who May Object to Unlawful Searches and Seizures: 1980 Supreme Court Cases on 'Standing' Limit Application of the Exclusionary Rule," Institute of Government Administration of Justice Memorandum No. 81/01 (1981).

"Conspiracy and Vicarious Liability - North Carolina Supreme Court 'Disapproves' Existing Caselaw," Institute of Government Administration of Justice Memorandum No. 80/07 (1980).

"A 'Routine' Felony Arrest May Not Be Made in the Home of a Third Party Without a Search Warrant," Institute of Government Administration of Justice Memorandum No. 81/03 (1981).

"The Exclusionary Rule in Criminal Procedure," Popular Government, 47, No. 3 (Winter 1982), pp. 23-26.

"Criminal Law and Procedure," Institute of Government, North Carolina Legislation 1981, pp. 96-116. (Coauthors)

"Evidence," Institute of Government, North Carolina Legislation 1983.

Editor, North Carolina Courts Center, Legislative Bulletin for Court Officials (1981, 1983).

Reporter, North Carolina Conference of Superior Court Judges, North Carolina Pattern Jury Instructions for Civil Cases (1981 - 1983).

Exhibit 2: disclaimer

In the interest of brevity, I will use generalizations liberally. These generalizations will not always be completely and literally accurate. Nevertheless, I believe that they will be accurate enough for current purposes. For example, I know that propagation on VHF/UHF is not strictly limited to straight line or line of sight. Nevertheless, the statement is accurate enough for the context in which it appears. Further, I know that there are certain limited satellite operations that occur, in part, on high frequency. It is not literally accurate to say that satellite communications occur only on VHF/UHF. Nevertheless, because satellites do not occur at all below 21 MHz, and because satellites with some HF operation generally have uplink frequencies on VHF/UHF, are in low earth orbit and available for limited times, and/or have analogue transponders for use with CW and SSB, the statement that satellite communications occur at VHF/UHF is accurate enough. Finally, I recognize that mother nature has not erected a wall at 30 megahertz. She did not dictate one set of laws for 31 MHz and another set of laws for 29 MHz. Yet the distinctions between high frequency and VHF/UHF are real and important. There will be other such generalizations.

I am not an engineer. My knowledge of technical matters is limited to my amateur radio experience. My knowledge of operational theory and practice is based on my experience in the activities in which I participate. I have tried to be accurate in my comments. To that end, I have conducted research at times. If I venture beyond my knowledge and make statements that are in error, then I apologize, and I assure the Commission that any such misstatements are not intentional.

Exhibit 3
Self certification explanation and form.

Explanation. I draw on these experiences: (1) a North Carolina criminal prosecutor for five years, (2) an associate professor of public law and government for four years, and (3) a litigation attorney representing personal injury defendants and worker's compensation employers for 12 years. I have occasionally represented plaintiffs as well.

I believe that the current physician's certification has the effect of providing "cover" for some unscrupulous applicants determined to abuse the waiver process. The applicant takes comfort from the doctor's signature on the certificate. He believes that he has not actually certified the issue himself; he has merely deferred any such opinion to his doctor.

Furthermore, interposing a physician or surgeon between the applicant and the CW test provides little assurance that the applicant is entitled to the waiver. Over a period of 12 years, I have routinely deposed and interviewed physicians and surgeons. I have examined and cross examined them in court. I know that doctors generally resent *being used as enforcement tools for policies* that have little to do with healing. When called upon to perform such task, the instinct of many doctors is to look for the easiest and quickest way out. If he refuse the certification, then he faces a potentially time consuming and stressful confrontation. If he signs the certificate, the matter is over. Finally, the current certification is so lengthy that few doctors are likely to read it.

In my opinion, self certification can encourage compliance with the Commission's rules by making the applicant directly and personally responsible for his own representations. An unscrupulous applicant considering committing certification fraud would have to weigh the possibility (however remote) of a criminal prosecution against his desire for an amateur license upgrade.

See attached form

Exhibit 3 (page 2)

Certification Form

I CERTIFY THAT I am severely handicapped, the duration of which will extend for more than 365 days beyond this date. My handicap consist of: *name or describe disease or condition*

_____.
I certify that, due solely and exclusively to the severe handicap set forth above, I am unable to train for and pass a 13 or 20 words per minute telegraphy examination, in that: *describe how handicap makes it impossible for you to train and pass the examination*

_____. I understand that volunteer examiners make exceptionally accommodative arrangements, and I have considered each of the following practices: *(initial each item on the space provided)*

_____ They will adjust the tone in frequency and the volume to suit me.

_____ They will administer the examination at a place convenient and comfortable to me, even at bedside.

_____ For a deaf person, they will send the dots and dashes to a vibrating surface or flashing light.

_____ They will write my dictation.

_____ If warranted, they will pause in sending the message after each sentence, each phrase, each word, or each character to allow me additional time to absorb and interpret what was sent.

_____ They will even allow me to send the message, rather than receive it.

I hereby represent and certify to the Commission and the VEC, under penalty of law as set forth below, that even if I were accommodated by one of the above practices, it would not be possible for me to acquire the requisite telegraphy skill and pass a 13 or 20 words per minute telegraphy examination. I further certify that my inability to acquire such skill and pass the examination is due entirely to my handicap named or described above and not to a purpose of evasion or other factor.

Signature: _____ **date:** _____

Furthermore, I certify that I know of no other accommodations that I can suggest that would make it possible for me to acquire the requisite telegraphy skill and pass a 13 or 20 words per minute telegraphy examination.

Signature : _____ *date:* _____

Exhibit 3 (page 3)

Self Certification Form (continued)

Furthermore, I understand that my certification will **not** be routinely reviewed for substantive content, and that neither the VEC nor the Commission will render a judgment on the substantive adequacy of my claim for a waiver of the 13 or 20 words per minute examination based upon my representations set forth above. Any action by the VEC or the Commission in approving my application does not indicate in any way that the VEC or the Commission has determined that I am handicapped or that the handicap named or described above prevents me from acquiring the requisite skill and passing a 13 or 20 words per minute telegraphy examination. I hereby take direct and exclusive responsibility for each representation, conclusion, and inference contained in this certification.

Signature : _____ **date:** _____

I understand it is a federal crime to willfully make a false statement in this certification; that the criminal penalties for any **willful false statement** in this certification include **fine** and **imprisonment** as set forth in Title 18 of the United States Code, Section 1001; and that such criminal penalties are in addition to the civil and administrative penalties that would be imposed in the event of a willful false statement herein.

Signature : _____ **date:** _____

4

Exhibit 4
Extra class phone and CW sub-bands

The extra class phone sub-bands to be *eliminated* are: (a) 3.750 to 3.775; (b) 14.150 to 14.175; and (c) 21.200 to 21.225 MHz. Under the proposal to eliminate the extra class phone sub-bands, these frequencies would become part of the advanced class phone sub-bands. Both extra class and advanced class amateurs would be permitted to operate on these frequencies.

The extra class CW sub-bands to be *retained* are: 3.500 to 3.525; 7.000 to 7.025; 14.000 to 14.025; and 21.000 to 21.025 MHz. By custom and practice these frequencies have traditionally been used only for higher speed CW, particularly in connection with international activity. Under the proposal, these frequencies would continue to be available for such purposes to extra class amateurs exclusively.

Exhibit 5
Examples of misinformed opinion on CW

This is the correspondence page from the August 1998 issue of *Worldradio*. The letter printed under the rubric, "CW survey flawed?" makes clear that in an earlier letter, an amateur had claimed to have conducted some kind of "survey" and determined that CW was all but dead. Unfortunately, I did not have the July issue in which the earlier letter. This is one example of how some proclaim the demise of CW in total disregard of the overwhelming objective proof to the contrary.

In Exhibit 23, below, David Sumner, K1ZZ, publisher of the ARRL's *QST*, made the following observation: "CW contest operators can only chuckle when they hear of the impending demise of the mode. The fact is that scores keep climbing as both the number and the skill of participants continue to increase."



Off the air

He tells it like it is

Kudos to Brian Hunsaker, W5CHH, for his excellent letter, "Reply to CW" in the June issue, in reply to John Frank, Jr., WB3ICL, static against CW. It is very well written and he tells it like it really is, covering all of the bases.

A.T. LENNY, W7IBC
Wenatchee, WA

Get with it, man!

Recently, I found in the mailbox a sample copy of *Worldradio*, and the best thing in it is a letter from Brian Hunsaker, W5CHH, in reply to one from John Frank, WB3ICL, a CW-hater.

These anti-CW technomaniacs have long puzzled me. It's not just that CW is no good — it must be, like Carthage, destroyed and sown with salt! For some of the younger set, the existence of CW must be a constant reminder of their own inadequacy. For old-timers like

Frank, it seems more like scorn for those laggards who, unlike him, are mired in a past that started two hours ago. "What, you don't have a 999-trillion-byte hard drive? Get with it, man!"

Lately, I read in *National Geographic* about the Whitbread round-the-world sailboat race. "Sailboats? Columbus used sailboats, get with it, man!" In the high southern latitudes where westerly gales and mountainous seas are staples, they passed near Kerguelen and Heard Islands. I have worked on CW both Kerguelen and Heard where small groups of Hams, with a bit of the spirit of Columbus and the Whitbreas sailors, worked the world.

Mr. Frank and his like will never understand Hunsaker, myself and the Kerguelen Hams, but we will endure; today, tomorrow and the day after that.

FRED GRANT, AA4NG
Newport News, VA

(Ed. What? That was the best thing in the magazine?)

CW survey flawed?

While I don't want to perpetuate the CW debate, I was angered by the editorial comments made by Bill Mayers, KG2DI ("Where are all the CW ops?") in your July issue. Mr. Mayer's description of his amateurish efforts to conduct a survey lacks any pertinent fact and shows a basic misunderstanding of CW. I'm not an exclusive CW man; perhaps 60% of my contacts are made in that mode, but I rarely sit on a frequency and ragchew in Morse code. I chase DX, and most of those contacts are quick hitters. It's entirely possible that one or more of the "three QSOs" he heard on 80 Meters were DX stations, handing out contacts at a rate of 60-100 QSOs per hour. It's almost certain that most of the "25 QSOs" he heard on 75 Meters were extended ragchews by a few old timers who, in many cases, are fiercely possessive of "their" frequencies. He also fails to mention times, dates, flux levels, his antenna farm, or any one of numerous other factors which would influence his ability to hear, for instance, on 30 Meters.

DXers' love CW for its ability to snag countries in difficult conditions and large pileups. I worked the 3B6RF group ten times, eight of them on CW. I didn't pay any special attention to the mode, I worked 'em where I could. One night I tried calling for an hour on 40-meter sideband and just didn't have the brute force to get through. When they were spotted on 40 CW, I tuned down and worked them with my second call. I responded via the Internet to one amateur in Florida who hadn't been able to work them at all, even after they'd been on St. Brandon for two weeks. I'd already worked them eight times. Turns out he had never made a CW contact.

Examples of rude amateur practice should not be used as an example for shutting down a mode, or spectrum. The "angst-filled individuals" he describes as wanting "their own private preserve, with only a select few longtime on-air acquaintances" can be found on

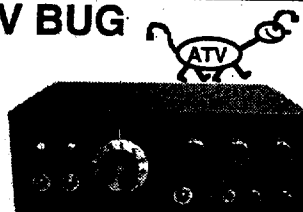
(continued on page 69)

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Tom (W6ORG) & Mary Ann (WB6YSS)

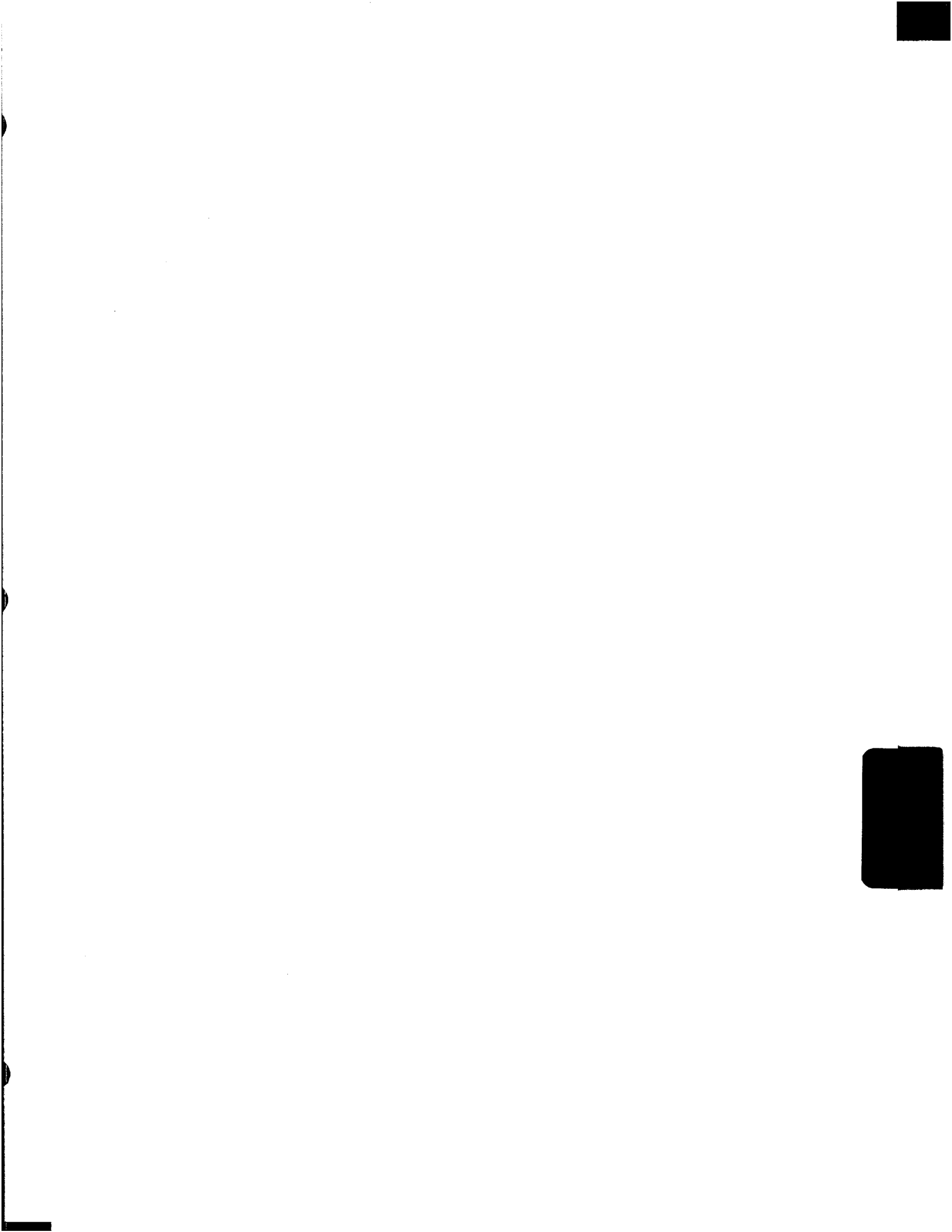


Exhibit 6
DX Packet Cluster network

The DX Packet Cluster is a network operating on VHF/UHF. It monitors actual on-the-air activity. Foreign stations are "spotted" on the network by frequency and time. It is possible to determine from the frequency if a station was operating SSB, CW or RTTY. In the case of RTTY, the US amateur spotting the station will normally include a comment such as "RTTY" or "FSK." A "spot" means that a foreign amateur is operating and a US amateur has heard him.

I prepared the attached pages using the "print screen" key on my packet computer. I printed them at random times, over a period of several recent weeks. On each page I have marked CW stations with 'c,' SSB station with 's,' and each RTTY station with 'r.' I have penciled in totals for each mode.

The method is not as scientific as if I had printed all spots, 24 hour a day, over some extended period of time, such as a week. Unfortunately, that was not a practical possibility. Nevertheless, the random method was sufficient to demonstrate that CW activity is substantially similar to SSB activity, with RTTY a distant third place. One might also conclude that SSB activity dominates during mid-day when the 28 MHz band is open, and that CW activity dominates in the late evening and the early morning.

S 21295.0	S790Y	6-Nov-1998	1752Z	qsx 300-305 qsl kf8oy	<KI4RU>
S 28510.0	CT3GV	6-Nov-1998	1744Z		<WA4DAI>
S 28500.0	EABAMT	6-Nov-1998	1738Z	JUSTO ...CANARY ISL.	<KN4F>
S 21295.0	S790Y	6-Nov-1998	1704Z	Roger KF80Y	<W4PJ>
S 28515.8	V51E	6-Nov-1998	1702Z		<N4WPG>
R 2 86.1	D68BW	6-Nov-1998	1646Z	wrked 21.087.20	<W9OL>
C 28025.0	TY8A	6-Nov-1998	1643Z	up five correction	<WB2HWK>
S 28320.0	KB6NAN	6-Nov-1998	1643Z	DIANNA HIDEING OUT!	<KB9MDL>
S 28550.0	TY8A	6-Nov-1998	1641Z	up five	<WB2HWK>
S 28332.1	DH3JH	6-Nov-1998	1641Z	QRZ!	<KB9MDL>
S 28406.7	DN9CDR	6-Nov-1998	1638Z	QRZ 10-10 WOW!	<KB9MDL>
C 18084.0	S92YN	6-Nov-1998	1635Z	qsx up 1	<WB2LJW>
S 24942.5	TE45ZM	6-Nov-1998	1632Z		<KQ6SL>
? 24929.8	HH2LQ	6-Nov-1998	1632Z		<KN4F>
C 24894.5	TY8A	6-Nov-1998	1631Z	WHERE IS HE?	<KC0CRA>
C 18082.4	V01AA	6-Nov-1998	1624Z		<W2YR>
S 24940.0	EABAX	6-Nov-1998	1623Z	- CANARY ISL.	<KN4F>
C 24912.0	HB9KAR	6-Nov-1998	1622Z	/CQ	<KN4F>
S 28490.3	E30FA	6-Nov-1998	1624Z		<K4CIA>
C 24904.0	DN4ON	6-Nov-1998	1620Z		<KN4F>
W4NZC de K4MD 6-Nov 1816Z >					

sh/dx/20

F1 - HELP VHF Packet

TOTALS

CW = 6

? = 1

SSB = 12

RTTY = 1

OVER ALL TOTALS

CW 136

SSB 87

RTTY 5

CDX de N4TX:	10116.0	DL1XAQ/HIB	QSYed & going begging	2057Z
CDX de N2TX:	7004.5	4L8A	cq	2102Z
CDX de W1TQ:	10108.0	TY8A	QSOX 10.12337 first call	2107Z
CDX de W2GG:	21300.0	TZ6JA		2111Z
CDX de N1RLI:	14240.0	7P8HH	pob 1172 Maseru Lesotho	2118Z
CDX de VA3DX:	10105.2	JA1LZR	on 1p	2110Z
Ww. de K4PC-7 <21> : SFI=141, A= 18, K= 2, MOD/QUIET-MIN.STRM;MOD-HIGH/UNSET-A				
C				
CDX de K3ZD:	7001.4	JA3XNH	LP	2126Z
CDX de K3ZD:	7008.6	SV1ENG		2127Z
CDX de K3ZD:	7005.3	SV2BOH		2129Z
CDX de N3RS:	7020.1	JQ2VZY	LP	2129Z
CDX de K4DAR:	14194.9	E30GA		2131Z
CDX de K3ZD:	7009.7	SV1ENG	moved...	2137Z
CDX de KZ4V:	7010.0	CU1CB	CQ JA	2137Z
CDX de WQ1T:	3503.0	TY8A	QSOX UP 2	2143Z
CDX de K3ZD:	7011.2	DS2RDG	LP	2150Z
CDX de N3RS:	7013.9	DS5VGA	LP	2149Z
CDX de AA1K:	1829.6	G3SED		2150Z
CDX de N1QY:	7012.8	7X4AN		2202Z
CDX de N3RS:	7011.1	JA9IFU	LP	2155Z

sh/dx/20

F1 - HELP VHF Packet

November 6, 1998

CW	16
SSB	3
RTTY	0

CDX de W2SF:	7013.8	S53ED		2237Z
CDX de N3SL:	28021.2	JL1KFR/JD1	up	2239Z
SDX de K4DAR:	14234.0	VK3EW	LP	2244Z
CDX de KZ4V:	7012.4	HB0/HA6PS/P		2244Z
CDX de K3DV:	7009.7	SV1ENG		2246Z
DX de AA1K:	1831.8	GW3IXN	where's 4S7EA?	2254Z
CDX de KORX:	14022.3	5R8FK		2253Z
CDX de K5YG:	28014.3	3D2QB	Allan CQing	2253Z
CDX de W2WG:	28019.3	TI2CCC		2256Z
SDX de K3SOF:	28469.0	JH7BZR		2257Z
CDX de AA1K:	1831.8	GW3JXN	typo sri	2257Z
SDX de NN2C:	28491.0	5W0GD	STRONG SPLIT 5 TO 10 UP	2259Z
SDX de N1HRW:	28443.0	CE6JDA		2300Z
SDX de N4VV:	24898.0	FK8VHT		2302Z
SDX de W1DF:	14195.0	E30GA	up 200-210	2257Z
CDX de K3SX:	1830.0	EA3JE	Wkg VE1ZZ	2306Z
CDX de N4VV:	24900.0	BD4ED		2307Z
SDX de W2LO:	24938.0	KH2JU	freq corr	2305Z
CDX de N4VV:	24907.8	DU3NXE		2312Z

W4NZC de K4MD 6-Nov 2315Z >

F1 - HELP VHF Packet

CW: 12
SSB: 7
RTTY: 0

c	DX de N4VN:	21032.3	EA3HK		1202Z
s	DX de WA2VUY:	28515.0	UT7Z	also contest	1203Z
	DX de WA2VUY:	28515.0	UT7Z	also contest	1203Z
c	DX de K2UFM:	28020.0	E30GA	WKED 28025.6	1202Z
	DX de K2UFM:	28020.0	E30GA	WKED 28025.6	1202Z
c	DX de KZ4V:	10102.6	ZF2GS		1204Z
	DX de KZ4V:	10102.6	ZF2GS		1204Z
c	DX de VE3KLM:	14014.3	US1ITU		1202Z
	DX de VE3KLM:	14014.3	US1ITU		1202Z
c	DX de K1WD:	28058.0	GOIJE	Don, Bnmth, FISTS	1208Z
	DX de K1WD:	28058.0	GOIJE	Don, Bnmth, FISTS	1208Z
s	DX de WA2VUY:	28527.0	VU2WAP	qsy...Where u go Miku?	1208Z
	DX de WA2VUY:	28527.0	VU2WAP	qsy...Where u go Miku?	1208Z
c	DX de NQ1K:	24896.0	SU3NQ	up2	1209Z
	DX de NQ1K:	24896.0	SU3NQ	up2	1209Z
s	DX de W4NU:	28476.0	S58WW		1207Z
	DX de W4NU:	28476.0	S58WW		1207Z
	WWV de N4TY-9 <12> :	SFI=141, A= 20,	K= 3, Mod,Qt-Act=>Mod-High,Unset-Act		
	WWV de N4TY-9 <12> :	SFI=141, A= 20,	K= 3, Mod,Qt-Act=>Mod-High,Unset-Act		
s	DX de W2JZK:	21260.0	SK7DX	IOTA EU-137	1218Z
	DX de W2JZK:	21260.0	SK7DX	IOTA EU-137	1218Z

c k4md

F1 - HELP VHF Packet

CW 6
SSB 4
RTTY 0

11/11/9

4DX de WC4K: 14019.4 E30GA 2046Z
WWV de N4TY-9 <21> : SFI=162, A= 38, K= 3, Mod,Qt-MajStrm=>Mod,Unset-MinStr
4DX de WA4QDM: 7005.4 SV2CQB 2121Z
4DX de K4QL: 14019.9 E30GA up 2133Z
4DX de KZ4V: 7006.7 EA5/MOAMR cq 2136Z
JX de KZ4V: 7001.4 7X4AN 2140Z
4DX de KZ4V: 7008.5 HG4I 2146Z
SDX de N2BT: 14185.0 TYBA up 5 - 10 2157Z
SDX de KR4EO: 21220.0 FM5WE GUY 2151Z
SDX de W4GB: 14185.0 TYBA UP 5-10 2146Z
SDX de VE1ZZ: 1824.0 TYBA up 5 2201Z
XDX de KC9GG: 14185.0 TYBA qsx 14190.0 via dl7df 2207Z
4DX de N2TX: 7001.7 9K2ZZ cq NA 2208Z
SDX de W1QLF: 28490.0 CX4ACR 2214Z
SDX de WA2VUY: 3791.5 UTOZZ strong but he QRM 2216Z
4DX de K1VW: 1827.4 G3WGV 2216Z
SDX de WA2VUY: 3788.7 4KA5CW not hearing well 2217Z
4DX de K3RR: 3511.0 4L2M 2220Z
SDX de WA3TBG: 3799.8 4N9BW EU 163 2220Z
4DX de KZ4V: 7005.2 UN7MZ 2222Z
SDX de WA2VUY: 28465.0 CX6ABZ 2229Z
4DX de K1VW: 1832.6 FM5BH 2228Z
sh/config

F1 - HELP

VHF Packet

Scrolled

X = Duplicate Spots

CW 11

SSB 9

RTTY 0

11/8

^ DX de K3ND:	7006.0	4X4WN		0248Z
^ DX de W2SM:	1827.6	3D0CA		0249Z
^ DX de WP4Q:	3800.0	CT1FMX		0249Z
✓ DX de K3SX:	50125.0	KB0MJD	DN94>FM19	0254Z
✓ DX de N4LGY:	50124.9	WB4MMI	EM55 > KOTSI DM79	0252Z
DX de K1VW:	1827.5	3DA0CA		0253Z
✓ DX de NBZJN:	50037.0	VE4VHF/B	s9+ EN19>EM79	0301Z
^ DX de N3RR:	3795.1	DJ7AA	qrz dx	0406Z
✓ DX de K3SX:	50125.0	W7XU	EN13>FM19 Arliss in SD	0410Z
✓ DX de KU4AR:	50135.0	KM6BF	DM34 > EM55	0409Z
^ DX de WA2DAX:	3789.9	UT0ZZ	calling cq	0419Z
^ DX de W2LU:	3791.7	V51E		0427Z
^ DX de W4WM:	3795.1	DJ7AA	WIL	0437Z
^ DX de W3UR:	7004.9	T32VU		0459Z
^ DX de W4GP:	7009.6	HJ1RRL		0509Z
✓ DX de KA9FOX:	50160.0	W7XU	en13->en43 59! Then moved him	0508Z
✓ DX de KA9FOX:	144220.0	W7XU	en13->en43 SDak he may be back	0509Z
✓ DX de K3SX:	144200.0	KA9FOX	Where did Arliss go?	0515Z
✓ DX de KA9FOX:	50125.0	W7XU	STILL ,LOCOUD HR	0516Z
^ DX de KQOB:	7005.0	T32VU	STILL CALLING SIMPLEX	0520Z
^ DX de KE4WI:	7001.0	Z31CZ		0551Z

sh/config

F1 - HELP VHF Packet

V = VHF/UHF

CW 7

SSB 5

RTTY 0

S	28487.8	T99W	11-Nov-1998	1319Z	59	EMIL	<NC4US
S	28478.0	Z32KV	11-Nov-1998	1317Z		CORRECTON 59	<NC4US
C	28477.1	Z32KV	11-Nov-1998	1313Z	55		<NC4US
S	28474.6	5A1A	11-Nov-1998	1239Z			<AA4R
C	18071.2	TY8A	11-Nov-1998	1235Z		QSX 18100.0	<N4VN
R	14085.8	OY4TN	11-Nov-1998	1221Z		RTTY	<N4VN
C	7012.8	ZF2NT	11-Nov-1998	1153Z			<N4VN
S	3799.0	VK3DZM	11-Nov-1998	1135Z			<KE4RNA
C	10105.4	T32VU	11-Nov-1998	1129Z		LOUD VIA DJ5IW	<W4FGB
C	10109.6	TY8A	11-Nov-1998	0529Z		QSX 10123.0 [DID.DC	<NE3F
C	3505.0	TY8A	11-Nov-1998	0457Z			<W3UR
S	3799.3	OK2RZ	11-Nov-1998	0452Z			<W4DC
C	1830.2	CO2JR	11-Nov-1998	0443Z			<W4DUP
S	28440.0	VK4MR	11-Nov-1998	0440Z			<WP4NHM
C	10105.7	9J2B0	11-Nov-1998	0430Z			<K5VRX
C	1830.0	CO3JR	11-Nov-1998	0426Z		Jorge	<K3JJG
C	7009.2	9J2B0	11-Nov-1998	0413Z		BRIAN	<NE3F
C	3501.0	DJ7AA	11-Nov-1998	0339Z		Wil CQ'n	<WI5A
S	3790.0	E308A	11-Nov-1998	0331Z		False alarm. He's back.	<WI5A
S	3799.0	GONVD	11-Nov-1998	0317Z		Not the VK station...	<W4WNT

W4NZC de K4MD 11-Nov 1329Z >

SH/DX/20

F1 - HELP VHF Packet

X = Duplicate Spot

CW 10

SSB 8

RTTY 1

S DX de W5AA:	21255.1	YC9WZJ	johnie on irian jaya	2341Z
C DX de N4TX:	10106.1	OX3FV		2343Z
- To ALL de N4XMX <2350Z> : somebody's got something going on 21.295 but I can				
ear				
S DX de N1AC:	14196.3	XV300S	via JH1EVE	2347Z
S DX de W4TJE:	21295.0	YC1VX	i think	2352Z
S DX de W4TJE:	21291.0	VK9XTL	cq'ng/weak/few takers	2354Z
C DX de K4VT:	14004.2	HF0POL	S. SHETLANDS	0008Z
C DX de W4FOA:	14011.1	VK9XQR	VIA HB9QR	0007Z
C DX de N3SCR:	7025.0	TY8A	up1	0027Z
C DX de K4MQG:	14022.0	XV300S	SAIGON	0044Z
S DX de K4EM:	14190.0	4S7EA		0041Z
C DX de W3NR:	7009.0	WP2/W7NG		0057Z
S DX de K1ST:	14196.1	E30GA		0055Z
C DX de N5DG:	7007.3	T94B		0058Z
S DX de WP4Q:	3790.1	DL1AUZ	and co.	0100Z
C DX de W3NR:	7024.0	KP4RP		0102Z
X DX de N4VN:	7007.4	T94B		0115Z
C DX de W4FOA:	7024.4	TY8A	QSOX UP	0116Z
S DX de AC4UU:	14196.0	E30GA	HOME BOYS	0121Z
C DX de W2HTI:	14004.3	HF0POL	BIG sig!	0125Z

SH/DX/20

F1 - HELP VHF Packet

Nov 11, 1998

X = Duplicate Spot

CW 10

SSB 8

S	21295.0	BQ9P	12-Nov-1998	2344Z	21270-21290	<K4QL>
S	14195.0	E30GA	12-Nov-1998	2334Z	QSOX 14206.33	<W4MYA>
S	21295.0	BQ9P	12-Nov-1998	2326Z	NO COPY HERE !!!!!!!	<KB5GL>
^	21022.3	XV30DS	12-Nov-1998	2331Z	xcv now	<K4KK>
^	14025.1	BQ9P	12-Nov-1998	2326Z		<W4MYA>
C	14022.1	UA0QBA	12-Nov-1998	2320Z	ALEX	<K4VT>
S	14195.0	E30GA	12-Nov-1998	2310Z	200-210	<N4PQX>
S	24941.9	JH3KHM	12-Nov-1998	2245Z	BAND IS OPEN TO ASIA	<W4DR>
C	24895.8	T32IW	12-Nov-1998	2241Z	UP 2	<N4VN>
C	7015.9	BQ9P	12-Nov-1998	2235Z	wrked up 5.4	<K4QL>
S	14227.6	RA9CKQ	12-Nov-1998	2232Z	ANDY VIA W3HNK	<K4PC-7>
C	10108.0	E30GA	12-Nov-1998	2221Z	UP 2	<W4NZC>
C	7015.9	BQ9P	12-Nov-1998	2215Z	(ESP HERE)	<W4FOA>
S	21295.7	V31PC	12-Nov-1998	2215Z	NICE SUFFIX, EH?	<K4PC-7>
C	14006.0	4Z4DF	12-Nov-1998	2214Z	AVI, WEAK HR.	<K4PC-7>
S	14195.0	E30GA	12-Nov-1998	2208Z	QSOX 200-210	<K4PC-7>
C	7016.1	CU/DL2DVE	12-Nov-1998	2156Z		<KZ4V>
S	28485.0	VK4DZ	12-Nov-1998	2150Z		<K2IUK>
C	7007.0	7X4AN	12-Nov-1998	2147Z		<KZ4V>
S	28500.0	ZL2VPD	12-Nov-1998	2148Z		<K2IUK>
W4NZC de K4MD 12-Nov 2350Z >						

SH/DX/20

F1 - HELP VHF Packet

CW 10

SSB 10

RTTY ϕ

(Duplicate spots off setting)

S	3800.0	UTOZZ	13-Nov-1998	0155Z		<W4KL>
S	3799.9	TY8A	13-Nov-1998	0229Z	QSOX 3780.18	<W4PV>
C	14035.0	UA0AZ	13-Nov-1998	0152Z	ALEX	<KR4EO>
C	7005.0	TY8A	13-Nov-1998	0225Z	QSOX 7008.3	<K3ANS>
S	3792.4	FM5FJ	13-Nov-1998	0219Z		<KA1CLX>
-	7001.0	CO9BIA	13-Nov-1998	0221Z		<K4PC-7>
-	7009.0	DL1XAQ/HIB	13-Nov-1998	0214Z		<WV1D>
X	3799.9	TY8A	13-Nov-1998	0213Z	QSOX 3785	<K3ANS>
C	10104.0	CO9BIA	13-Nov-1998	0211Z		<WB2QJ>
S	14195.0	E30GA	13-Nov-1998	0200Z	YL simplex	<WA4VA>
S	14193.0	4S7EA	13-Nov-1998	0154Z		<W4MYA>
C	10105.0	JX7DFA	13-Nov-1998	0142Z	QSOX 10106.76	<NN4T>
C	7007.1	RX2DX/FJL	13-Nov-1998	0138Z	FRANZ JOSEF LAND, UP 3	<K4VT>
S	3799.8	FM5GU	13-Nov-1998	0135Z		<W4KL>
R	14082.0	E30GA	13-Nov-1998	0127Z	FSK up up	<K4ADK>
C	7007.2	RX2DX/FJL	13-Nov-1998	0120Z	up abt 1	<K4KK>
C	3502.0	JX7DFA	13-Nov-1998	0040Z		<K2BA>
S	21295.0	BQ9P	13-Nov-1998	0041Z	simplex easy	<W7WT>
C	7004.0	JX7DFA	13-Nov-1998	0037Z	QSOX up 1	<K2BA>
C	28024.0	BQ9P	13-Nov-1998	0036Z	Loud	<KL7J>
W4NZC de K4MD 13-Nov 0251Z >						

SH/DX/20

F1 - HELP VHF Packet

CW 11

SSB 7

RTTY 1

c 7005.0	T32IW	13-Nov-1998 1335Z	UP SLOW SENDER	<AA4S>
c 14025.1	BQ9P	13-Nov-1998 1222Z	yep..up up up	<K4QL>
X 14025.1	BQ9P	13-Nov-1998 1221Z	up...I thk...dont sign	<K4QL>
s 3795.0	UAOFF	13-Nov-1998 1214Z		<W4TO>
c 7005.5	BQ9P	13-Nov-1998 1157Z	up up up	<K4QL>
c 7005.0	T32IW	13-Nov-1998 1053Z	strong - ez - up now	<K04PY>
s 14185.0	DJ7AA	13-Nov-1998 0653Z	CQ	<W3UR>
s 14243.0	KC4AAA	13-Nov-1998 0524Z	Antarctica qsl NC6J	<K0PY>
c 1828.4	KH6CC	13-Nov-1998 0504Z		<K3JJG>
c 1828.5	FM5GS	13-Nov-1998 0502Z		<K3JJG>
c 14018.2	UAOLMD	13-Nov-1998 0459Z	t k3jjg GN David	<K3SX>
c 7022.6	TY8A	13-Nov-1998 0446Z	Q5X UP 5	<K3SX>
? 7045.0	E30GA	13-Nov-1998 0439Z		<W4MYA>
c 1827.5	DJ7AA	13-Nov-1998 0425Z	Very weak here	<K3SX>
c 7003.0	SV1BUU	13-Nov-1998 0411Z	calling cq-lonesome	<KF4C>
c 10106.6	ZS6QU	13-Nov-1998 0403Z		<N4KG>
c 10108.1	TY8A	13-Nov-1998 0355Z	calling CQ, Q5X 10125	<AA5F>
c 3507.3	YZ1RA	13-Nov-1998 0358Z		<W01T>
c 7008.1	ZS5LB	13-Nov-1998 0355Z		<N9FH>
c 3503.6	FG5EY	13-Nov-1998 0354Z		<K3ZO>
W4NZC de K4MD 13-Nov 1402Z >				

sh/dx/20

F1 - HELP VHF Packet

CW	14
SSB	3
RTTY	0
?	1

C DX de K3ZD:	7012.0	SV1BUU		2128Z
C DX de N4YIC:	14024.6	4Z5JU		2128Z
C DX de W4FOA:	7002.9	E30GA	(LOUD ALREADY) QSX UP	2127Z
S DX de N4YIC:	14190.0	E30GA	Qsx Up...	2132Z
R DX de N4YIC:	14083.0	XR0Z	Robinson Crusoe Island	2134Z
A DX de K3ZD:	7001.3	V29TU	via HB9TU	2135Z
C DX de K3ZD:	7016.4	5B4ADA		2140Z
S DX de K4KK:	28509.9	J39EC		2141Z
S DX de N4YIC:	28511.0	T32IW	Up..	2141Z
S DX de N4YIC:	14195.0	9G1BJ		2142Z
C DX de K3ZD:	7001.4	7X4AN		2143Z
S DX de N4PQX:	28495.0	ZL8RS	qsx 28500	2145Z
X DX de K3NC-16:	14083.9	E30GA	14086.0	2149Z
C DX de AI2C:	14010.0	ZB2FK	THE ROCK VIA CBA	2148Z
C DX de N4YIC:	14017.0	RV1AC		2148Z
X DX de N4YIC:	7003.0	E30GA		2201Z
C DX de WQ1T:	3510.0	KP2J		2201Z
S DX de W4MBD:	14195.0	BQ9P	Semi-messy	2149Z
S DX de WA2VUY:	28495.0	ZL8RS	qsx 500, 1,2,3s	2210Z
R DX de K4NA:	14087.3	ZD7DP	RTTY	2211Z
C DX de W4FOA:	14024.8	BQ9P	UP 7 (S1-ESP)	2212Z

C K4MD

F1 - HELP VHF Packet

X = Duplicate Spots

November 13, 1998

CW 10

SSB 7

RTTY 2

C DX de WP4Q:	14023.0	TY8A	just worked	2059Z
S DX de VE1YX:	28500.0	ZL4NR		2100Z
JV de K4PC-7 <21> : SFI=125, A= 8, K= 1, LOW/QUIET-UNSET;LOW/QUIET-UNSET				
C DX de W4FOA:	28020.7	T32IW	QSOX UP	2110Z
C DX de K3KY:	7000.9	V51KG		2114Z
X DX de W4EP:	14023.1	TY8A	QSOX 14028.08 CQing, few caller	2122Z
C DX de WY3A:	14011.8	FY5YE		2118Z
C DX de N2JT:	21015.8	9Y4NW	CQ	2121Z
To ALL de K4SB <2123Z> : Anyone have the Lat\Long for Pratus?				
C DX de W4FOA:	14020.0	E30GA	(MUST BE WINDING DOWN) QSOX UP	2130Z
C DX de W4HJ:	14023.0	TY8A	QSOX 14032.75 cqing	2135Z
C DX de K3ZD:	3509.0	TY8A	UP	2137Z
C DX de DL7UZO:	7004.6	BQ9P	QSOX up	2139Z
C DX de W4FOA:	14027.7	V44KJ	CQING	2137Z
S DX de K3SOF:	28350.0	LU3ADU		2139Z
X DX de W4FOA:	14028.0	TY8A	QSOX UP	2137Z
C DX de W4FOA:	14011.1	UA0QBA	CQING	2140Z
S DX de K3SOF:	28404.5	PU2YKZ		2141Z
S DX de JH6ETS:	7056.0	BQ9P	SIGNAL UP	2142Z
C DX de DL1RWN:	3510.0	E30GA	UP	2142Z
C DX de W4FOA:	7012.6	DN4AEK	CQ NA	2142Z

SH/DX/10

F1 - HELP VHF Packet

November 16

CW 13
SSB 4
RTTY ϕ